

The law of the contrasts is therefore simpler in Monocotyledons than in Dicotyledons.

The former may be symbolized by the triangle, 3 and 6 being the typical numbers in the flower; the latter by the square or pentagon, 4 and 8, 5 and 10 being the prevalent numbers.

The simplicity of figure corresponds with simpler contrast of colour in the one, while greater complexity of colour and of structure are in direct relation in the other.

In families of Monocotyledons having regular flowers there is regular distribution of the colours, for instance, in Amaryllidaceæ, Liliaceæ, &c.

Orchidaceæ are notable examples of the other law, that irregularity of form and of colour are associated. In a large proportion of this family the colours are yellow or yellow-green, and purple or red-purple; the latter being confined to the part of the corolla usually called *lip*.

Proceeding on the principle, that since plants of all epochs of the earth's history were constructed on the same general plan, so the same associations of colour, and of colour and form, must have prevailed also, we shall glance finally at a few conclusions which may be derived from this source.

During the earlier periods when Acrogenous Cryptogamia were abundant, the secondary and tertiary colours, as russet, purple, citrine, green, must have prevailed.

During the reign of Gymnosperms, when Cycadæ and Coniferæ were numerous, the secondary and tertiary colours must still have given a sombre aspect to the vegetable world.

From the commencement of the Chalk formation there appears to have been a very marked and progressive increase of Angiospermous Dicotyledons, which form at least three-fourths of existing vegetation. Among them we find the floral organs with greater prominence in size, form and colour; and such prominence of the "nuptial dress" of the plant, to use the quaint expression of Linnæus, is peculiarly a feature of species belonging to natural families which have attained their maximum in man's epoch, and are characteristic of it.

XXXVII.—On *Linaria sepium* of Allman.

By CHARLES C. BABINGTON, M.A., F.R.S., &c.*

At a meeting of the Royal Irish Academy, held June 6th, 1843, the occurrences at which are reported in the 'Proceedings' of that body, Dr. G. J. Allman described what he supposed to

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be a new species of *Linaria*, and upon which he conferred the name of *L. sepium*.

In the second edition of my 'Manual of British Botany' (p. 232), the opinion was stated that the plant is "scarcely more than a variety of *L. italica*," and in the third edition of the same book I ventured to consider it and the *L. italica* of the Manual as hybrids between *L. vulgaris* and *L. repens*.

In consequence probably of the latter remark, I was favoured by Dr. Allman, in June 1852, with a large packet of living specimens and roots of the disputed plant. A careful examination of these, and a comparison of them with living specimens of *L. repens*, led me greatly to doubt the correctness of the supposition that it was a variety of *L. repens*; and Dr. Allman justly states in a letter to me that the "total absence of *L. vulgaris* from the neighbourhood where the plant in question abounds must render hybridization impossible." In another letter he remarks, "I only know of one spot in the neighbourhood of Bandon where *L. vulgaris* grows apparently wild, and there very sparingly. It may possibly have escaped from a neighbouring garden. This spot is more than a mile in a direct line from the nearest patch with which I am acquainted of *L. sepium*, and three or four miles from other localities where the *L. sepium* is abundant." Also, "in the same hedge with the apparently wild plants of *L. vulgaris* just mentioned, and removed perhaps from these about 100 yards, grows *L. repens*, and yet not a trace of *L. sepium* have I found to grow within a mile of them." These remarks show the great improbability, if indeed I might not say impossibility, of the *L. sepium* being a hybrid. Two of the roots received from Ireland have grown well and flowered profusely in the Cambridge Botanical Garden, and have thus afforded an excellent opportunity for studying the plant.

As I now believe the plant to be a distinct species, I have drawn up the following character and description of it, and in doing so have followed the type of the descriptions of the allied species to be found in the valuable 'Monographie des Antirrhinées' of Chavannes.

Linaria sepium (Allm.); radice repente, caulibus erectis glabris, foliis lineari-lanceolatis acutis sparsis, floribus racemosis, sepalis ovatis acutis glabris calcare brevioribus, seminibus tuberculato-scabris trialatis.

L. sepium, Allman in *Proceed. R. Irish Acad.* (1843) p. 404.

Caules e rhizomate repente incrassato sæpeque tuberculis instructo prodentes, plurimi, simplices vel ramulosi, læves, basi lignescentes (cortice fuscescente), bipedales; ramuli alternes, erectiusculi. Folia pollicaria vel sesquipollicaria, lineari-lanceolata, utrinque attenuata,

acuta, subtrinervia (nervis lateralibus tenuibus), erectiuscula, glaucescentes, inferiora sæpe subterna ceteraque sparsa. Bracteæ linearilanceolatae, acutissimæ, erectæ, inferiores pedicello longiores, superiores pedicello breviores. Racemus strictus, laxiusculus. Calyx parvus; segmentis e basi lato attenuatis, acutissimis, glaberrimis, trinerviis, post anthesin apice paululum reflexis. Corolla minor quam in *L. vulgari*; calcar conicum, paululum incurvum, corollam æquans; tubus, calcar et labium superius grisei striis pallide purpureis signati; labium inferius dilute luteum striis pallide purpureis et parum distinctis notatum; palatum villis luteis vestitum, villis pallide purpureis quemque marginem investientibus, valde prominens, bilobum, lobis aurantiacis; lobis labii superioris ellipticis, dorso invicem applicatis sed apicibus incurvis; lobis labii inferioris lateralibus reflexis conniventibus, oblique rotundatis intermedio patenti latioribus et paululum longioribus. Stigma capitatum. Capsula subovata, dehiscentes superne sex valvulis lanceolatis, calycem subæquans. Semina subtrialata; testa nigra, muricata.

Found plentifully near the river at Bandon, in the county of Cork, flowering from June to September.

L. sepium forms dense masses of strong stems, and presents a very different appearance from *L. repens* or *L. vulgaris*. Its flowers and seeds are unlike those of either of them; and in size the flowers are almost exactly intermediate between those of its allies. The same part of the rhizome does not appear to flower a second time, but numerous stems spring up at a short distance from it, which flower in the succeeding year.

In *L. vulgaris* the middle lobe of the lower lip of the corolla is relatively much smaller and is *strongly reflexed*, whilst the lateral lobes are patent-deflexed.

In *L. repens* the lobes of the upper lip of the corolla are erect with incurved points, and all those of the *lower lip patent*.

It will be seen above that in *L. sepium* the lobes of the upper lip are pressed closely back to back; and that the lateral ones of the lower lip are reflexed, but the intermediate one is patent. The colours also are different.

After a careful examination of all the descriptions of *Linaria* with which I am acquainted, I have not found any recorded species to which this plant can be referred. I am therefore reluctantly compelled to consider it as a new species. It agrees in many respects with *L. linifolia* (Chav.), differing chiefly in the presence of a few three-leaved whorls towards the base of the stem, the shorter upper bracts, the striped flowers, and the three-winged seeds.

The seeds of *L. sepium* are different from those of any species that I have examined. They are discoidal, and surrounded by a wing; but have in addition another wing on one of the sides which is variable in its size and direction, being sometimes nearly

at right angles with the disk, and at others laid so closely upon it as to be with difficulty detected. Rarely the additional wing is reduced to a reduplication of the wing of the disk through more or less a distance. The disk is covered on each of its sides with elevated ridges radiating more or less regularly from the centre. The whole seed is black.

XXXVIII.—*Characters of four Indian species of Cyclophorus, Montfort, followed by Notes on the Geographical Distribution of the Genera of the Cyclostomacea in Hindostan.* By W. H. BENSON, Esq.

1. *Cyclophorus altivagus*, nobis.

Testa angustissime umbilicata, fere perforata, globoso-conica, solida, striata, superne rufa, castaneo picta, subtus versus periomphalum albida; spira elevata, turbinata, acutiuscula; anfractibus $5\frac{1}{2}$ convexis, superne costis spiralibus sex munitis, ultimo rotundato, ad periphæriam vix carinato, basi lævigata, umbilico pervio; apertura vix obliqua, subovali-circulari, superne angulata, intus lutescente; peristomate duplici, interno continuo, valde porrecto, acuto, externo expansiusculo, costam fingente, superne anguste angulatum adscendente, ad anfractum penultimum late emarginato, margine columellari minime sinuato, supra umbilicum angustum dilatato-reflexo. Operc.?

Diam. major 31, minor 26, alt. $24\frac{1}{2}$ mill. Apert. intus 17 mill. longa, 15 lata.

Hab. in summis montibus Mahabuleshwar Indiæ Meridionalis. Describit A. E. Benson.

A single decorticate specimen was found by my son, Lieut. Arthur E. Benson, Tenth Royal Hussars, after the close of the rains of 1853, on the summit of the range of Ghauts overlooking the low tract in which *Cyclophorus Indicus* occurs. It differs from this species in its more elevated form, indistinct keel, rounded last whorl, more elongate aperture, porrect inner lip, the absence of any sinuosity in the plane of the aperture on the columellar lip, less expanded outer peristome, and by the greater expansion of the external columellar lip over the umbilicus, which is also much narrower; and permits no view of the internal whorls. The outer lip, at its junction with the last whorl, rises more suddenly to a point than in *C. Indicus*. It is probable that when in good condition the internal border of the aperture is of an orange colour. In the specimen before me I can find no trace of the close-set raised lines between the liræ which are present in all my specimens of *C. Indicus* from Elephanta and the Concan, however weathered. In one antiquated specimen of the latter, with a porrect superstructured inner peristome, this